**Unit Planning Guide: Grade \_\_6\_ Unit \_7\_\_ of \_7\_\_**

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| Unit Title: Statistics and Probability | Pacing (Duration of Unit): 5 weeks |
| Grade: 6 | Buffer Day(s): |

**Transfer Goals**

*Students will be able to independently use their learning to:*

* **Make sense of problems and persevere in solving them.**
* Reason abstractly and quantitatively.
* Construct viable arguments and critique the reasoning of others.
* **Model with mathematics.**
* Use appropriate tools strategically.
* Attend to precision.
* **Look for and make use of structure.**
* Look for and express regularity in repeated reasoning.

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| **Established Goals (2011 MA Curriculum Frameworks Standards Incorporating the Common Core State Standards)** |

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| Standards (Priority Standards in bold):  6.SP.1 Recognize a statistical question as one that anticipates variability in the data related to the question and accounts for it in the answers. *For example, “How old am I?” is not a statistical question, but “How old are the students in my school?” is a statistical question because one anticipates variability in students’ ages.*  **6.SP.2 Understand that a set of data collected to answer a statistical question has a distribution which can be described by its center, spread, and overall shape.**  6.SP.3 Recognize that a measure of center for a numerical data set summarizes all of its values with a single number, while a measure of variation describes how its values vary with a single number.  6.SP.4 Display numerical data in plots on a number line, including dot plots, histograms, and box plots.  MA.4.a. Read and interpret circle graphs.  **6.SP.5 Summarize numerical data sets in relation to their context, such as by:**  **a. Reporting the number of observations.**  **b. Describing the nature of the attribute under investigation, including how it was measured and its units of measurement.**  **c. Giving quantitative measures of center (median and/or mean) and variability (interquartile range and/or mean absolute deviation), as well as describing any overall pattern and any striking deviations from the overall pattern with reference to the context in which the data were gathered.**  **d. Relating the choice of measures of center and variability to the shape of the data distribution and the context in which the data were gathered.** | **WIDA for English Language Learners**  Standard 1: ELLs **communicate** for **Social** and **Instructional** purposes within the school setting  Standard 3: ELLs **communicate** information, ideas and concepts necessary for academic success in the content area of **Mathematics**  In the lesson planning stage, teachers will need to differentiate lessons for ELLs. In order to accomplish this they will need: 1.) this curriculum map, 2.) a list of their ELLs and their proficiency levels, and 3.) appropriate language function expectations and scaffolds or supports. |

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| **Big Ideas:**   * Students as sensible, critical users of probability and statistics, able to apply their processes and principles to real-world problems. * Understanding that data can be affected by the context in which it was gathered. * Understanding probability and statistics is essential in the modern world, where print and electronic media are full of statistical information and interpretation | **Essential Questions:**   * How do people use data to influence others? * How does data influence our decisions? * How has the use of data changed throughout history? * How does the use of data determine future decisions? |

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| **Acquisition (\*Mostly assessed through traditional summative assessments)** |  |
| **Knowledge:** Key basic concepts, facts, and key terms (written in phrases) students should be able to recall independently.  *Students will know …*   * The difference between a statistical and non-statistical question * That a set of data collected to answer a statistical question has a distribution which can be described by its center, spread, and overall shape * That a set of data can be displayed numerically on a data plot, a histogram, or a box plot * Data sets can be described by measures of center (median and mean) and variability (interquartile range and/or mean absolute deviation) | **Skills:** The discrete skills and process students should be able to use independently (Bloom’s Level of Learning should be noted in parentheses.)   * *Students will be skilled at:* * Identifying a statistical question as one that anticipates variability in the data related to the question and accounts for it in the answers. (comprehension) * Demonstrating that a set of data collected to answer a statistical question has a distribution that can be described by its center, spread, and overall shape. (synthesis) * Explaining that a measure of center for a numerical data set summarizes all of its values with a single number, while a measure of variation describes how its values vary with a single number (evaluation) * Summarizing and describing distributions (display numerical data in plots on number line, including dot plots, histograms, and box plots). (synthesis) |
| **Vocabulary:**   * measure of center * outlier * range * relative frequency table * statistical question * statistics * box plot * histogram * interquartile * mean absolute deviation * upper extreme * lower extreme * cluster * distribution * dot plot * frequency table * histogram * interval * standard deviation * statistical variability * median * mean * upper quartile * lower quartile  |  | | --- | |  | | **Knowledge Questions:**   * Why are there so many ways to describe data? * When is one data display better than another? * When is one statistical measure better than another? * What makes a good statistical question? * How do I determine whether a set of data is categorical or numerical? * How can I describe what is typical about a set of data? * How can I describe how much the data varies? |

**Resources:**

**CC aligned free lessons & guided practice:** [**www.learnzillion.com**](http://www.learnzillion.com/) **Each Learnzillion link in the chart below has multiple videos on the left side of the website.**

**CC aligned word problems & open response problems:**  [**www.illustrativemathematics.org/standards/k8**](http://www.illustrativemathematics.org/standards/k8)

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| **Link** | **Standard(s)** |
| <https://www.illustrativemathematics.org/6.SP.A.1> | 6.SP.1 |
| <http://learnzillion.com/lessons/2482-find-the-mean-by-equally-distributing-objects>  <https://www.illustrativemathematics.org/6.SP.A.2> | 6.SP.2 |
| <http://learnzillion.com/lessons/3383-express-mean-median-and-mode>  No Illustrative Math tasks for this standard yet | 6.SP.3 |
| <https://www.illustrativemathematics.org/6.SP.B.4> | 6.SP.4 |
|  | 6.SP.MA.4a |
| <http://learnzillion.com/lessons/542-determine-the-number-of-observation-in-a-set-of-data-by-looking-at-histograms-and-line-plots>  No Illustrative Math tasks for this standard yet | 6.SP.5a |
| <http://learnzillion.com/lessons/542-determine-the-number-of-observation-in-a-set-of-data-by-looking-at-histograms-and-line-plots>  No Illustrative Math tasks for this standard yet | 6.SP.5b |
| <http://learnzillion.com/lessons/542-determine-the-number-of-observation-in-a-set-of-data-by-looking-at-histograms-and-line-plots>  <https://www.illustrativemathematics.org/6.SP.B.5.c> | 6.SP.5c |
| <https://www.illustrativemathematics.org/6.SP.B.5.d> | 6.SP.5d |

**Technology (VIDEOS)**

**Khan Academy** [**http://www.khanacademy.org/math/cc-sixth-grade-math**](http://www.khanacademy.org/math/cc-sixth-grade-math)

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| **Link** | **Standard** |
| <http://www.khanacademy.org/math/cc-sixth-grade-math/cc-6th-data-statistics/cc-6th-statistics> | 6.SP.1, 6.SP.2, 6.SP.3 |
| <http://www.khanacademy.org/math/cc-sixth-grade-math/cc-6th-data-statistics/cc-6th-box-whisker-plots> | 6.SP.4 |
| <http://www.khanacademy.org/math/cc-sixth-grade-math/cc-6th-data-statistics/cc-6th-bar-charts> | 6.SP.4 |
| <http://www.khanacademy.org/math/cc-sixth-grade-math/cc-6th-data-statistics/cc-6th-line-picto-graphs> | 6.SP.5 |

**GO MATH PROGRAM (STANDARDS:** 6SP1; **6SP2;**6SP3; 6SP4; 6SP(MA)4a; **6SP5a, b, c, d)**

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| **Lesson Number** | **Lesson Title** | **Standard(s) Covered** |
| 12.1 | Recognize Statistical Questions | 6SP1 |
| **12.2** | **Describe Data Collection** | **6SP5a, 5b** |
| 12.3 | Dot Plots & Frequency Tables | 6SP4 |
| 12.4 | Histograms | 6SP4 |
| **12.5** | **Mean as Fair Share & Balance Point** | **6SP5c** |
| **12.6** | **Measures of Center** | **6SP5c** |
| **12.7** | **Effects of Outliers** | **6SP5d** |
| 12.8 | Data Displays | 6SP4 |
| **13.1** | **Patterns in data** | **6SP5c** |
| 13.2 | Box Plots | 6SP4 |
| **13.3** | **Mean Absolute Deviation** | **6SP5c** |
| **13.4** | **Measures of Variability** | **6SP5c** |
| **13.5** | **Choose Appropriate Measures of center & Variability** | **6SP5d** |
| 13.6 | Apply Measures of Center & Variability | 6SP3 |
| **13.7** | **Describe Distributions** | **6SP2** |
| **13.8** | **Misleading Statistics** | **6SP2** |

**NOTES:**

16 Go Math lessons correspond to WPS Unit Guide 7

**lessons in bold print correspond to priority practice standards in WPS unit guides**

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| **MA.6.SP.4a (Read and interpret circle graphs.) is not cited in the WPS unit guides, and is not covered by the Go Math program.** |  |  |  |
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**MATH IN FOCUS**

Chapter 13 Opener Introduction to Statistics Foundational for **6.SP.4**

**13.1 Collecting and Tabulating Date 6.SP.1, 6.SP.2, 6.SP.5,**

**6.SP.5a, 6.SP.5b**

**13.2 Dot Plots 6.SP.4, 6.SP.5d**

**13.3 Histograms 6.SP.4, 6.SP.5d**

**Chapter 14 Opener Measures of Central Tendency**

**6.SP.2, 6.SP.3, 6.SP.5**

**14.1 Mean 6.SP.2, 6.SP.5, 6.SP.5a, 6.SP.5c, 6.SP.5d**

**14.2 Median 6.SP.3, 6.SP.5d**

**14.3 Mode 6.SP.4, 6.SP.5d**

**14.4 Real-World Problems: Mean, Median, and Mode 6.SP.3, 6.SP.5d**